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## ABSTRACT

A study asked students from four professional colleges at a medium-sized midwestern college whether they had observed 14 of the "chilling practices" (practices which chill women, i.e. sexist practices) described by R. M. Hall and B. R. Sandler ("The Classroom Climate. A Chilly One for Women?") whether the instructor engaging in the practice was male or female, and whether the student viewed the practice as important. Subjects were 115 students in business administration, 35 students in education, 84 students in engineering, and 82 students in health and human services. Results indicated that there were significant differences between men and women in their views of the importance of the chilling behaviors they observed, but not between the numbers they observed, nor the gender of the instructors engaging in the behavior. In addition, significant differences existed between the four professional schools in students' perceptions of the gender of the instructors engaging in the chilling behaviors. While, overall, male instructors were viewed as more likely to employ chilling behaviors, in at least one college, both female and male students reported female instructors engaging in more chilling behaviors. Generally, findings confirm the chilly climate hypothesis and suggest continued action to reduce chilling practices. (Contains 24 references and 4 tables of data.) (RS)

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AN EMPIRICAL TEST OF HALL AND SANDLER'S 1982 REPORT:  
WHO FINDS THE CLASSROOM CLIMATE CHILLY?

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Abstract

CHILLY CLIMATE

While Hall and Sandler's publication of The Classroom Climate: A Chilly One For Women? has generated considerable comment, it has generated little empirical research. This study asks students from four professional colleges at a medium sized mid-western college whether they have observed 14 of the chilling practices described by Hall and Sandler, whether the instructor engaging in the practice was male or female, and whether the student viewed the practice as important. Findings indicate that there are significant differences between men and women in their views of the importance of the chilling behaviors they observed, but not between the numbers they observed, nor the gender of the instructors engaging in the behavior. In addition, significant differences exist between the four professional schools in students' perceptions of the gender of the instructor's engaging in the chilling behaviors. While overall male instructors are viewed as more likely to employ chilling behaviors, in at least one college, both female and male students report female instructors engaging in more chilling behaviors. Generally, the study finds confirmation of the chilly climate hypothesis and suggests continued action to reduce chilling practices.

The purpose of this study was to determine whether there is evidence of a chilly classroom climate at a mid-sized midwestern university and/or whether there were differential effects of that chilling among four of the professional colleges at that university. The word *chilly* is used in the context reported in 1982 by Hall and Sandler, in *The Classroom Climate: A Chilly One for Women?* Hall and Sandler focus on a number of practices which if applied differentially to any group of students would be discouraging and "chilling." Their focus is upon practices that chill women. The chilly climate hypothesis claims that a number of biased classroom practices operating in concert produce a college climate that favors men over women. There are really two kinds of practices that are hypothesized as the chief contributors to a chilly climate for women: (a) there are the blatantly sexist practices--direct misogynistic attacks and indirect misogynistic attacks through sexist humor. Second, there are more subtle practices--practices which ~~in isolation~~ may be viewed as unimportant. While it would be foolish to claim higher education is free of blatantly sexist practices, it would be difficult to find individuals who overtly commend such practices even among those who still engage in them. Even if the blatant practices were eliminated, however, the Hall and Sandler thesis would claim that the subtle practices working in concert would still produce a chilling effect that undermines the confidence of women.

*The Classroom Climate: A Chilly One for Women?* has generated considerable commentary in the decade since its publication, but comparatively little empirical study. The two studies that were designed to provide empirical evidence yielded inconsistent results and left the question open (Constantinople, Cornelius, & Gray, 1988; Heller, Puff, & Mills,

1985). More importantly, those studies did not test the underlying model of the chilling climate hypothesis.

In 1985, Heller and colleagues attempted a direct test of the chilly climate hypothesis using a survey process. Undergraduate students were asked to provide frequency ratings of nineteen behavioral questions derived from Hall and Sandler (1982). In addition items were included to rate student educational confidence, perceptions of faculty behavior, and perceptions of themselves and their education. They found little to support the chilly climate and little difference in the students reports of faculty behavior toward men and women students. There did appear to be some changes over the four years in college and some differences in the responses of students in different fields of study.

In 1988, Constantinople, Cornelius and Gray, approached the chilly climate hypothesis as an observational study. In this approach, student undergraduate observers were trained to code student and faculty behaviors. Observations were then carried out three times during a semester providing repeated measures on the same classroom groups. They found no significant differences in the faculty behaviors toward male or female students, but they did find a lower level of student participation in male taught classes and in science classes. Male students were marginally more active in class and instructors of both sexes were more likely to expand on a comment from a male student. When class size differences were eliminated the effects were less strong. The authors concluded that the results did not support the chilly climate hypothesis, but that there were some differences in the male and female experience. They were concerned that there were no measures of content of the faculty/student interactions and that their Vassar college classes might not be representative.

Interestingly, the discussion section of both studies seem even more than usually insistent that the results are not definitive and there may still be other sources of subtle discrimination not yet tapped. This strength of the disclaimer may reflect the pressure of feelings expressed but not supported by the study, the difficulty of designing good tests of the questions raised, or the pressure to appear supportive on women's issues. Whatever its source the issue appears to be current and unresolved.

Although previous studies of gender differences in higher education is extensive, most studies do not address what takes place in the classroom. Gender differences have been reported in treatment of faculty (Alpert, 1989), in school participation and measurement of ability (AAUW, 1992), in expenditures for extracurricular activities (Hall & Sandler, 1984; Sandler, 1986), in treatment of administrators and staff (Sandler, 1986), and a variety of other issues which only indirectly impact on the classroom. For studies which report the more subtle process of differential reinforcement and behavioral expectations in the classroom, Hall and Sandler (1982, 1984), as well as a number of their colleagues turned to the literature on teacher/student interactions in a variety of settings. Only a few of the studies cited were directly applicable to higher education.

Concerns about higher education for women seem to have evolved over time, beginning with early studies in which women were described as a problem. Their fear that educational success would alienate them from others, especially males, resulted in their avoidance of such success (Horner, 1972). That "fear of success" hypothesis remains, but is somewhat overshadowed by results which indicated that women respond differently in the classroom (Brophy & Good, 1974; Sternglanz & Lyberger-Ficek, 1977; Thorne, 1979),

"talk" differently" (Treichler & Kammarae, 1983), and participate less in class (Brooks, 1982; Stern glanz & Lyberger-Fecik, 1977) than do males. Some studies have even suggested that women will never fit into the current model for higher education and should be provided an alternative type of classroom experience (Treichler & Kramarae, 1983). Such an approach echoes other attempts at separation with equality and arouses the fear that women will simply be provided side-by-side classes, but will continue to be outsiders in the mainstream of higher education. Many current authors recommend that women's approaches, strengths, and differences be studied, acknowledged and incorporated into the regular classroom experience, and that the classroom be reexamined for subtle discriminatory practices (Treichler & Kammarae, 1983; Sandler, 1986).

College classrooms are largely uninterrupted, unsupervised, and unobserved by outsiders, but exploration of the activities in the classroom may provide the best focus to determine if male and female students experience the classroom differently. Studies of classroom behavior are usually of two types, observational and survey, and each has some problems in application. Observation in a classroom invariably runs the risk of changing the behaviors being observed. On the one hand, both the teacher and the student feel observed and may be self-consciousness, and at worst may react with deliberate presentations of themselves. On the other hand, surveys which sample generalizations about classes run the risk of being nonspecific and of sampling attitudes not directly related to a class at all.

Survey studies about the classroom experience have examined gender differences in student ratings of instructors, and instructors ratings of students. Bassow and Silberg (1987) found that male student ratings of female professors were significantly lower than ratings of

male professors on all scales; female students also rated them lower on some scales. But there was a clear difference in the way students from different fields of study rated the professors. Bennett (1982) used faculty and course evaluations and estimated availability of male and female faculty to their students. Although the estimates indicated greater availability of the female faculty, perceptions of availability did not reflect that. In Hechtman and Rosenthal's (1991) study Harvard undergraduates served both as teachers and as students using two sets of materials: verbal and quantitative/mechanical. Hechtman and Rosenthal studied interactions in which the materials were gender appropriate or inappropriate. Findings included greater hostility when teaching gender inappropriate material, less student satisfaction with male teachers when teaching gender inappropriate material, but no differences for female teachers. Those acting as teachers paid increased attention to students of the opposite gender when teaching gender inappropriate material and male teachers paid much more attention to students in the gender inappropriate condition. Although suggestive of some gender differences in experience, the only clear conclusion is that perceptions of gender related behavior occur, but perceptions may not reflect actual behavior.

Observational data from college classrooms were equally limited. Brooks (1982) observed beginning social work graduate students and recorded spontaneous verbal behavior including interruptions of both the teacher and other students. She found that males spoke more often and interrupted more than the female students, but more interruptions occurred in the female taught classes. She interpreted these as dominance behaviors. Pearson and West (1991) also found male students to ask more questions, but only in male taught classes. The

overall numbers of observed questions were very small--a little over three per hour.

Sternglanz and Lyberger-Ficek (1977) had similar results with observations of student initiated interactions and responses to teacher initiated interactions. They found that males responded to teachers more in male taught classes, and in science classes, but they found no differences in the responses of the teachers to the students.

Although the Good, Sikes and Brophy (1973) study is often cited by those writing about sex differences in college class rooms, it studies junior high students and is not directly applicable to college. In this study teachers of both sexes treated high achieving males most favorably and low achieving males least favorably, with treatment of female students in the middle.

Boersma and colleagues (1981) used both observational and survey data. They observed and recorded student/faculty interactions in the classroom followed by both a student and a teacher questionnaire. A few gender differences were found, but not to the extent predicted. Male students made more comments in non-science female taught classes and female teachers provided longer answers to female student questions. Perceptions and data did not always match the findings. Female teachers perceived male students to be more active and the findings indicated this was only sometimes the case. Female students reported visits to female professors more often than males, but the professors did not perceive a difference.

A series of studies by Rosenfeld and colleagues addresses the issue from a different perspective. In 1983, Rosenfeld studied liked and disliked classes using questions drawn from Gordon's (1990) study of the coping mechanisms students use in class. In 1985,

Rosenfeld and Jarrard added comparisons of responses to male and female professors and measures of nine dimensions of sexism taken from Chafetz (1978). They concluded that liked classes are more supportive and involving, and that teachers in liked classes were rated as less sexist. Male professors were rated more sexist than female professors. Low sexist male professor's classes required less defensive behavior than high sexist classes, but female professor's classes were too few to test on this issue.

In 1986, Rosenfeld and Jarrard again studied sexism and coping mechanisms and in this study reported no differences in the coping mechanisms used in female professor's classes, whether liked or disliked, but in male professors disliked classes significantly more day-dreaming, resistance, and hiding of feelings were reported. For those male professor's perceived to be sexist, a distinct pattern occurred. In liked classes, passive defensive reactions were reported; in disliked classes, hostile reactions like coalitions against the professor were reported. Sexism was reported for female professors but was not related to specific defensive reactions. Students in a disliked class usually develop some form of group cohesiveness in which they accept their assigned roles. These studies indicate that teachers may be forgiven and behaviors denied for liked classes and the same behaviors challenged and exhibited for disliked classes.

The available literature does not directly test the chilly climate hypothesis in a context where the findings could provide clear confirmation or disconfirmation of the hypothesis. In order to test the hypothesis, it was necessary to find out if students perceived the existence of the kinds of practices described by Hall and Sandler, the extent to which the sex of the instructor was perceived to be associated with the practices, and the degree to which students

perceived the importance of the practices.

### Procedures

#### Instrument

Each of the practices mentioned by Hall and Sandler (excluding the blatantly sexist practices) was listed as a question that described a chilling behavior in which an instructor might engage in a classroom. This resulted in a list of 33 questions. A series of five choices was created to indicate whether the practice had been observed, and if it was observed, whether it was directed toward men, toward both men and women, or toward women. The choices also indicated the degree to which the practice was biased. Second, in higher education departments and colleges differ in the numbers of men and women faculty. Students may study in a department where most or all of the faculty are women (a rare occurrence), where most or all of the faculty are men (quite common), or where there is a number that more closely reflects population proportions of the sexes. In other words, there are several possibilities with respect to the sex of instructors. The expectation of Hall and Sandler as well as reflections on the authors' own experiences indicate that where a chilling practice occurs, it is most likely that the instructor is male. If that is the case, however, the chilling hypothesis would be strengthened by measuring the degree to which it is male instructors who engage in the practice as opposed to female instructors. Therefore, a second question about each practice asked respondents to identify whether the practice (if they witnessed it) was a practice that was predominantly a practice of male instructors, female instructors, or both males and females. Again, a five point scale permitted respondents to indicate the degree to which the practice was practiced by male or female instructors.

Third, it is possible that those who witness the chilling practices do not view them as serious--that they are unchilled by them. Certainly, if the model is correct, it ought to be the case that men view the practices as less important than women. Thus, a third question was asked about each practice. The third question indicated the degree of seriousness with which the respondent viewed the practice.

Although there are strong similarities in some of the practices described by Hall and Sandler, the differences in wording were taken at face value and an item was constructed for each listed practice regardless of apparent redundancy. The result was a list of 33 items. Four variations of these items were prepared. The first version (GB1) focused on the current instructor in the class the student was taking. For example:

When asking students questions, the instructor--

- a. asks noticeably easier questions for women
- b. asks easier questions for women
- c. asks questions of the same difficulty for both men and women
- d. asks easier questions for men
- e. asks noticeably easier questions for men

The second version (GB2) and third version (GB3) focused on all the classes the student had completed. The second and third versions were produced by randomly selecting items from the first version until thirteen items were selected for GB2 leaving fourteen items for GB3. The items were re-cast so that GB2 and GB3 allowed a determination of whether the practice had been witnessed, the gender of the instructors who engaged in the practice, and the extent to which the respondent viewed the practice as a problem. For example:

I have observed that when it comes to recommending easier topics for presentations, instructors recommend easier topics

- a. much more frequently for women
- b. more frequently for women
- c. to men and women with about equal frequency
- d. more frequently for men
- e. much more frequently for men
- f. I have not observed instructors doing this at all.  
(leave blank and skip the next two questions)

Sex of instructor(s) involved

- a. male(s)
- b. female(s)
- c. both males and females, but males more than females
- d. both males and females about equally
- e. both males and females, but females more than males

[The scales on this item were transformed so that the scores ascended from male, to both males and females, but males more than females, to both males and females about equally, to both males and females, but females more than males, and females.]

Importance of this behavior

- a. not important to me at all
- b. of minor importance to me
- c. of average importance to me
- d. of above average importance to me
- e. highly important to me

Scoring

The first item in each set of three questions was scored in two ways. First, a frequency count of the number of students reporting that they had observed a practice was made. Second, all items were re-scored using 3 as the score for all items without responses. This manner of scoring produced a scale with 42 as the average and with scores above 42

indicating that the individual had observed behavior, on the average, biased against men while scores below 42 indicated that observed behaviors were biased, on the average, against women. For the second question, the data was recoded filling in a "3" or "neutral" response for those items not reported. The total scores for each item were computed and divided by 14 (the number of items) to produce an average score. That created scores where the scale mean was 3 indicating that the practice was (on the average) practiced equally by men and women. Any average score below 3 indicated that the practice was more frequent among male instructors than female, while a score above 3 indicated that the practice was more frequent among female instructors than male. The third item in each set, importance of the behavior to the person, was treated like the first. The scale mean was 42 with scores above that number indicating less importance while means below 42 indicated greater importance of the behavior to the person reporting.

Subjects:

The university studied is comprised of seven colleges, and a number of complementary administrative units such as its regional campuses. It is important to distinguish the reactions of those in different fields of study since a number of studies have established differences in student/teacher interaction based on type of class (Basow & Silberg, 1987; Constantinople, et al., 1988; Heller, et al., 1985). Of those seven colleges, four are clearly professional colleges. The College of Arts and Sciences and the College of Communication, while including some professional elements, nevertheless balance their programs with heavy attention to the liberal arts. The four professional schools sampled in this study were the College of Business Administration, the College of Education, the

College of Engineering, and the College of Health and Human Services. Consultation with the deans of the colleges resulted in permission to contact and administer the questionnaires to members of the various student groups in the colleges. Because of the uncertainties attendant to collecting responses from student groups, the idea of using both GB2 and GB3 was abandoned. Instead, the four student authors reviewed both forms and concluded that GB3 was more representative of the kinds of practices they had observed in their undergraduate years at the University. Since the interest was in discovering whether there were differences between the colleges, it made sense to use the version most likely to detect those differences even though theoretically the versions were equivalent. Those administrations took place early in spring quarter of 1992 and resulted in responses from 115 students in the College of Business administration, 35 students in the College of Education, 84 students in the College of Engineering, and 82 students in the College of Health and Human Services. Thus, the analysis was based upon 316 responses. Sixteen of the respondents failed to indicate whether they were male or female, and there were other individuals who failed to complete all responses required for each set of items. Those missing pieces of data were excluded from the analyses in which they played a role. Otherwise, subject responses or partial responses were included in analyses.

## Statistics

Each subject responded with three scores to each of the 14 instances, and since it was possible that any differences found in subsequent analyses could be due to relationships

among subject responses on the dependent and the various independent variables, SPSS-X PC was used to perform a multivariate analysis of variance on all variables: sex by college by existence of practice by sex of those performing the practice by perceived seriousness of the practice. Overall, the MANOVA indicated significant differences (Pillai's test indicated significance with  $p < .0001$ ).

With respect to the degree to which chilling instances are reported, the MANOVA indicated that both sex and college produced significant effects. Both men's and women's scores indicated that instances occurred more often for women than men. While women's scores consistently indicated more reports, the differences between men's and women's reports were not significant ( $F = 2.96, p < .09$ ). With respect to the sex of the instructor engaging in the behavior, there were no significant differences between the reports by male and female students on the whole ( $F = .054, p < .816$ ). Overall, the scores indicated that the sex of the instructors engaging in the practices was male. There were, however, instances in which the scores indicate that both male and female subjects noticed female instructors engaged in the practices more than male instructors. Women viewed the chilling practices more seriously than men ( $F = 27.23, p < .0001$ ). Thus, with respect to sex men and women both recognized the practices on the instrument and reported them in numbers that did not support the conclusion of differential perception. They reported that most of the instances came from male instructors. Even so there were no statistically significant differences between the reports of men and women about sex of the instructors who did the chilling. It was the seriousness with which the chilling practices were viewed that clearly distinguished men from women.

With respect to colleges, there were no significant differences in reports of the practices ( $F = 1.55$ ,  $p < .203$ ). The significant difference between colleges came in the reports of the sex of instructors responsible for the practice. There the differences were significant ( $F = 10.31$ ,  $p < .0001$ ). In the College of Business Administration women report more male instructors engaging in chilling practices while men report more female instructors engaging in chilling practices. In the College of Education, that pattern is reversed. Men report more chilling practices by male instructors and women report more chilling practices by female instructors. In the College of Engineering, both males and females report male instructors as the greater source of chilling practices. In the College of Health and Human Services both males and females report that female instructors engage in more chilling practices than males. There were no significant differences in reports of the seriousness with which the reports were viewed from college to college ( $F = .774$ ,  $p < .509$ ).

The reader can gain a clear picture of the various scores from the following tables. Table 1 indicates the frequency with which each practice is reported in the study. Table 2 reports student responses to the first item in each set of three designed to measure the existence of a practice and to whom that practice is directed. Table 3 reports student responses as to the sex of the instructor who engages in the chilling practice. Table 4 reports the student views of the seriousness of the practices.

TABLE 1

ITEM STEM	ITEM NO.	REPORTED INSTANCES
I have observed that when responding to students with remarks that "put down" the student, instructors	28	153
When provoking feelings of helplessness or impotence among students, instructors	7	152
I have observed that when provoking stereotyped reactions in students, instructors	22	134
I have observed that when it comes to limiting class activities and topics, instructors	13	133
I have observed that when looking past or appearing not to see students, instructors	1	129
I have observed that when questioning the academic commitment of students, instructors	34	129
I have observed instructors poking fun at or otherwise disparaging professional colleagues, instructors	16	124
I have observed that when it comes to recommending easier topics for presentations, instructors recommend easier topics	10	105
I have observed that when making comments that disparage all persons of a given sex, instructors	31	75
I have observed instructors referring to other faculty members in ways that define them in terms of sex rather than their professional status,	4	66
I have observed instructors employing sexually based comments or other inappropriate personal comments to annoy or distract students, especially in situations where performance is being evaluated, instructors	19	62
I have observed that when it comes to making remarks about opposite sex colleagues that define them in terms of sex rather than their professional status, instructors	25	53
I have observed that when instructors provoke students to expend energy in pointless conflict, anger, or self-doubt, they	40	2
I have observed that when it comes to discouraging groups of students from participating in some class activities, instructors	37	0

It will be helpful in understanding the remaining discussion of results to have in mind the following Tables (2 through 4). In this series of tables, males are coded as 0, females as 1, and College 1 = Business, College 2 = Education, College 3 = Engineering, and

College 4 = Health and Human Services.

Table 2  
Reports of Observation of  
14 Chilling Instances

Variable		Mean	Std Dev	Cases
For Entire Population		40.7033	2.8827	300
COLLEGE	1	40.3366	2.9505	101
SEX	0	41.6757	2.5826	37
SEX	1	39.5625	2.8888	64
COLLEGE	2	40.0294	2.9694	34
SEX	0	37.5000	2.1213	2
SEX	1	40.1875	2.9669	32
COLLEGE	3	41.2289	3.3031	83
SEX	0	42.1500	2.1219	60
SEX	1	38.8261	4.4990	23
COLLEGE	4	40.9024	2.1465	82
SEX	0	41.4167	2.0198	24
SEX	1	40.6897	2.1781	58
Total Cases =	316			
Missing Cases =	16 OR 5.1 PCT.			

Table 3

Reports of the Sex of the Instructors  
Performing the Chilling Practice

Variable	Value	Label	Mean	Std Dev	Cases
For Entire Population			2.8835	1.3365	279
COLLEGE	1		3.0846	1.2179	94
SEX	0		3.3198	1.2402	34
SEX	1		2.9514	1.1949	60
COLLEGE	2		2.9888	1.1703	31
SEX	0		2.5000	.2357	2
SEX	1		3.0226	1.2030	29
COLLEGE	3		2.2248	1.3231	79
SEX	0		2.2966	1.3206	56
SEX	1		2.0500	1.3422	23
COLLEGE	4		3.2817	1.3289	75
SEX	0		3.3880	1.2698	24
SEX	1		3.2317	1.3653	51
Total Cases =	316				
Missing Cases =	37 OR 11.7 PCT.				

**Table 4**  
**Reports of the Seriousness with**  
**which Subjects Viewed the Practice**

Variable	Value	Label	Mean	Std Dev	Cases
For Entire Population			41.3167	5.2766	300
COLLEGE	1		41.3663	5.0828	101
SEX	0		39.5135	5.9936	37
SEX	1		42.4375	4.1590	64
COLLEGE	2		43.4118	5.9039	34
SEX	0		33.0000	21.2132	2
SEX	1		44.0625	3.8932	32
COLLEGE	3		40.4217	5.3010	83
SEX	0		39.5500	4.8343	60
SEX	1		42.6957	5.8809	23
COLLEGE	4		41.2927	5.0564	82
SEX	0		38.2500	4.9804	24
SEX	1		42.5517	4.5621	58
Total Cases =	316				
Missing Cases =	16	OR 5.1 PCT.			

### Discussion

College students at this mid-western university report a number of chilling practices with women reporting more than men. These findings are consistent with the Hall and Sandler hypothesis that women are subject to more such practices than men. Certainly, many of the practices directed at a student, particularly if there are several such practices going on in different classes, will be discouraging and potentially chilling. At this university both men and women appear to recognize those practices. The recognition may pave the way for reducing the practices.

The finding that there are significant differences between students views of whether male or female instructors are responsible for the practices across the colleges raises serious questions about whether the chilling effect produced in women is primarily due to male instructors. Among the women in one college and among both men and women in another, it is female instructors who have the edge in performing the chilling behaviors. It is tempting to speculate as to why female instructors would join male counterparts to engage in behaviors that might adversely affect women students, but that temptation is reduced when we consider the finding that women view the chilling behaviors as significantly more important than men view them.

Women view the chilling behaviors as important. That clearly supports the Hall and Sandler hypotheses that chilling practices, particularly in concert, make women feel less confident and able on a college campus. The fact that students (both men and women) recognize these practices means that instructors ought to be able to recognize them and begin eliminating them.

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